

3.0 SUMMARY DESCRIPTION OF CALFED ELEMENTS

This chapter provides an overview of the CALFED project description, emphasizing certain elements or aspects of CALFED that are particularly important for the MSCS. Specifically, this chapter describes:

- the Preferred Program Alternative, which includes the six common programs and storage and conveyance elements;
- the MSCS;
- the CMARP; and
- adaptive management.

The Programmatic EIS/EIR describes the Preferred Program Alternative in greater detail, and appendices to the Programmatic EIS/EIR describe the common programs and CMARP.

3.1 CALFED PURPOSE AND PROCESS

CALFED's purpose is to develop and implement a comprehensive, long-term plan that will restore ecological health to the Bay-Delta system and improve management of water for beneficial uses. To achieve this purpose, CALFED will address problems of the Bay-Delta system within four critical resource categories:

- ecosystem quality,
- water quality,
- water supply reliability, and
- levee system integrity.

There are important physical, ecological, and socioeconomic linkages between the problems and possible solutions in each of these categories. Accordingly, CALFED cannot work to solve problems in one resource category without addressing problems in the other resource categories.

CALFED was divided into a three-phase cooperative planning process. This process should make it easier to determine the most appropriate strategy and actions to reduce conflicts in the Bay-Delta system. During Phase I, begun in May 1995, decision makers defined the Bay-Delta system's problems and began to develop a range of alternatives to solve them. An initial group of actions was developed and refined into three preliminary categories of solutions to be considered in Phase II. Phase I was completed in August 1996.

Currently, CALFED is in Phase II and is refining and evaluating the project alternatives. This phase will end when the final Programmatic EIS/EIR is approved. Implementation of the Preferred Program Alternative will begin during Phase III and will continue in stages over many years. Phase III will include any necessary studies and site-specific environmental review and permitting.

CALFED includes six “solution principles” that are to be used collectively to measure the overall acceptability of and ability to implement project alternatives. These solution principles guided the development of the alternatives during Phase I and the refinement and evaluation of those alternatives during Phase II. The six solution principles are:

- **Reduce conflicts in the system.** Solutions will reduce major conflicts over beneficial uses of water.
- **Be equitable.** Solutions will focus on solving problems in all areas. Problems will not be solved in some areas unless corresponding problems in other areas are also addressed.
- **Be affordable.** Solutions will be implementable and maintainable within the foreseeable resources of CALFED and stakeholders.
- **Be durable.** Solutions will have political and economic staying power and will sustain the resources they were designed to protect and enhance.
- **Be implementable.** Solutions will be accepted by the public, will be feasible legally, and will be timely and relatively simple to implement compared with other alternatives.
- **Pose no significant redirected impacts.** Solutions will not solve the Bay-Delta system’s problems by redirecting significant negative impacts, when viewed in their entirety, within the Bay-Delta or to other regions of California.

3.2 PREFERRED PROGRAM ALTERNATIVE

The Preferred Program Alternative includes several strategies to achieve improvements in the Program’s four critical resource categories: ecosystem quality; water quality; water supply reliability; and levee system integrity. While many actions within the strategies are described in terms of regional implementation, the multiple benefits derived from water management actions are most clearly demonstrated if these actions are described in terms of coordinated water management throughout the Bay-Delta system. This coordinated implementation is referred to as the CALFED WMS. The WMS is a flexible approach that will comprehensively and systematically evaluate the potential of all available water management tools to contribute to the achievement of CALFED objectives and will commit CALFED agencies to produce decisions that will aggressively use these tools in order to optimize water management for multiple CALFED objectives. The tools include water use efficiency, water transfers, water recycling, watershed management, water quality

improvements, conveyance facilities, and groundwater and surface storage opportunities. These tools can all be used in varying combinations, depending on hydrologic and environmental conditions, to meet all four CALFED objectives.

Two critical parts of the continuing refinement of the WMS include the EWA and the Integrated Storage Investigation (ISI). The EWA concept is that flexible management of water operations could provide the flow component of fish recovery more efficiently than a completely prescriptive regulatory approach. The EWA would be authorized to access water resources throughout the Delta's watershed by acquiring, banking, transferring, and borrowing water and arranging for its conveyance. The State and federal fishery agencies, as managers of the EWA, would apply these water "assets" to provide protective actions for fish, ranging from instream flows to reduced export pumping. See Section 3.6.6 of the Phase 2 Report for a complete description of the EWA and its flexible water management approach.

The ISI will evaluate surface storage, groundwater storage, power facility reoperation, and the potential for conjunctive operation of these different types of storage to achieve multiple CALFED objectives. Additionally, the nature of these investigations will provide an important opportunity to prepare a comprehensive assessment and prioritization of critical fish migration barriers for modification or removal. The ISI will enable CALFED to use existing facilities in ways that maximize CALFED benefits, assess the desirability of modifying other facilities where their costs exceed benefits, and consider the costs and multiple benefits of additional groundwater or surface storage in the context of an integrated WMS.

The Preferred Program Alternative consists of a set of broadly described programmatic actions that set the long-term, overall direction of CALFED. The description is programmatic in nature, intended to help agencies and the public make decisions on broad methods to meet CALFED purposes. The Preferred Program Alternative is made up of the Levee System Integrity Program, Water Quality Program, ERP, Water Use Efficiency Program, Water Transfers Program, Watershed Program, Storage, and Conveyance. The MSCS, CMARP, and adaptive management apply to all elements of the Preferred Program Alternative.

Even in this broad programmatic description, actions are intended to take place in an integrated framework and not independently of the other programs. While each CALFED element is described individually, it is understood that only through coordinated, linked, incremental investigation, analysis and implementation can CALFED effectively resolve problems in the Bay-Delta system.

CALFED will annually review the status of implementation of all actions, progress toward achievement of all goals and objectives, and compliance with schedules and financing agreements pertaining to CALFED. Funds will continue to be available only if CALFED is implementing actions, making progress toward goals and objectives, and complying with schedules and financing agreements in all areas in a balanced manner. If the governor or the Secretary of the Interior determines that CALFED has not substantially adhered to this balanced implementation, they will develop and approve a revised program schedule and budget to achieve balanced implementation.

3.2.1 LEVEE SYSTEM INTEGRITY PROGRAM

The focus of the Levee System Integrity Program is to improve levee stability to benefit all users of Delta water and land. Actions described in this CALFED element protect water supply reliability by maintaining levee and channel integrity. Levee actions will be designed to provide simultaneous improvement in habitat quality, which will indirectly improve water supply reliability. Levee actions also protect water quality, particularly during low-flow conditions when a catastrophic levee breach would draw salty water into the Delta.

There are five main parts to the Levee System Integrity Program plus Suisun Marsh levee rehabilitation work:

- **Delta Levee Base Level Protection Plan.** Improve and maintain Delta levee system stability to meet the U.S. Army Corps of Engineers' (USACE's) Public Law 84-99 standard.
- **Delta Levee Special Improvement Projects.** Enhance flood protection for key islands that provide statewide benefits to the ecosystem, water supply, water quality, economics, and the Delta infrastructure.
- **Delta Levee Subsidence Control Plan.** Implement current best management practices (BMPs) to correct subsidence adjacent to levees and coordinate research to quantify the effects and extent of inner-island subsidence.
- **Delta Levee Emergency Management and Response Plan.** The emergency management and response plan will build on existing State, federal, and local agency emergency management programs.
- **Delta Levee Risk Assessment.** Perform a risk assessment to quantify the major risks to Delta resources from floods, seepage, subsidence and earthquakes, evaluate the consequences, and develop recommendations to manage the risk.
- **Suisun Marsh.** Rehabilitate Suisun Marsh levees.

3.2.2 WATER QUALITY PROGRAM

CALFED is committed to achieving continuous improvement in the quality of the waters of the Bay-Delta system with the goal of minimizing ecological, drinking water, and other water quality problems, and to maintaining this quality once achieved. Improvements in water quality will result in improved ecosystem health, with indirect improvements in water supply reliability. Improvements in water quality also increase the utility of water, making it suitable for more uses. The Water Quality Program includes the following actions:

- **Drinking water parameters.** Reduce the loads and/or impacts of bromide, total organic carbon (TOC), pathogens, nutrients, salinity, and turbidity through a combination of measures that include source reduction, alternative sources of water, treatment, storage, and if necessary, conveyance improvements such as a screened diversion structure (up to 4,000 cubic feet per second [cfs]) on the Sacramento River near Hood. The Conveyance section of this document includes a discussion of this potential improvement.
- **Pesticides.** Reduce the impacts of pesticides through (1) development and implementation of BMPs, for both urban and agricultural uses, and (2) support of pesticide studies for regulatory agencies, while providing education and assistance in implementation of control strategies for the regulated pesticide users.
- **Organochlorine pesticides.** Reduce the load of organochlorine pesticides in the system by reducing runoff and erosion from agricultural lands through BMPs.
- **Trace metals.** Reduce the impacts of trace metals, such as copper, cadmium, and zinc, in upper portions of watershed areas near abandoned mine sites. Reduce the impacts of copper through urban storm water programs and agricultural BMPs.
- **Mercury.** Reduce mercury levels in rivers and the estuary by source control at inactive and abandoned mine sites.
- **Selenium.** Reduce selenium impacts through reduction of loads at their sources and through appropriate land fallowing and land retirement programs.
- **Salinity.** Reduce salt sources in urban and industrial wastewater to protect drinking water and agricultural water supplies, and facilitate development of successful water recycling, source water blending, and groundwater storage programs. Salinity in the Delta will be controlled both by limiting salt loadings from its tributaries, and through managing seawater intrusion by such means as using storage capability to maintain Delta outflow and to adjust timing of outflow, and by export management.
- **Turbidity and sedimentation.** Reduce turbidity and sedimentation, which adversely affect several areas in the Bay-Delta and its tributaries.
- **Low dissolved oxygen.** Reduce the impairment of rivers and the estuary from substances that exert excessive demand on dissolved oxygen.
- **Toxicity of unknown origin.** Through research and monitoring, identify parameters of concern in the water and sediment and implement actions to reduce their impacts to aquatic resources.

3.2.3 ECOSYSTEM RESTORATION PROGRAM

The goal of the ERP is to improve and increase aquatic and terrestrial habitats, and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. In addition, the ERP, along with the WMS, is designed to achieve or contribute to the recovery of listed species found in the Bay-Delta and, thus, achieve goals in this MSCS. Improvements in ecosystem health will reduce the conflict between environmental water use and other beneficial uses, and allow more flexibility in water management decisions. Representative ERP actions include:

- protecting, restoring, and managing diverse habitat types representative of the Bay-Delta and its watershed;
- acquiring water from sources throughout the Bay-Delta's watershed to provide flows and habitat conditions for fish protection and recovery;
- restoring critical instream and channel-forming flows in Bay-Delta tributaries;
- improving Delta outflow during key periods;
- reconnecting Bay-Delta tributaries with their floodplains through the construction of setback levees, the acquisition of flood easements, and the construction and management of flood bypasses for both habitat restoration and flood protection;
- developing assessment, prevention and control programs for invasive species;
- restoring aspects of the sediment regime by relocating instream and floodplain gravel mining, and by artificially introducing gravels to compensate for sediment trapped by dams;
- modifying or eliminating fish passage barriers, including the removal of dams, construction of fish ladders, and construction of fish screens that use the best available technology; and
- targeting research to provide information that is needed to define problems sufficiently, and to design and prioritize restoration actions.

3.2.4 WATER USE EFFICIENCY PROGRAM

The Water Use Efficiency Program includes actions to assure efficient use of existing and any new water supplies developed by CALFED. Efficiency actions can alter the pattern of water diversions and reduce the magnitude of diversions, providing ecosystem benefits. Efficiency actions can also result in reduced discharge of effluent or drainage, improving water quality. Water conservation-related actions include:

- Implement agricultural and urban conservation incentives programs to provide grant funding for water management projects that will provide multiple benefits which are cost-effective at the statewide level, including improved water quality and reduced ecosystem impacts.
- Identify, in region-specific strategic plans for agricultural areas, measurable objectives to assure improvements in water management.
- Expand State and federal programs to provide increased levels of planning and technical assistance to local water suppliers
- Work with the Agricultural Water Management Council to identify appropriate agricultural water conservation measures, set appropriate levels of effort, and certify or endorse water suppliers that are implementing locally cost-effective feasible measures.
- Work with the California Urban Water Conservation Council to establish an urban water conservation certification process and set appropriate levels of effort in order to ensure that water suppliers are implementing cost-effective feasible measures.
- Help urban water suppliers comply with the Urban Water Management Planning Act.
- Identify and implement practices to improve water management on wildlife areas.
- Gather better information on water use, identify opportunities to improve water use efficiency, and measure the effectiveness of conservation practices.
- Conduct directed studies and research to improve understanding of conservation actions.

Water recycling actions include:

- Help local and regional agencies comply with the water recycling provisions in the Urban Water Management Planning Act.

- Expand State and federal recycling programs to provide increased levels of planning, technical, and financing assistance (both loans and grants) and to develop new ways of providing assistance in the most effective manner.
- Provide regional planning assistance that can increase opportunities for the use of recycled water.

3.2.5 WATER TRANSFER PROGRAM

The Water Transfer Program proposes a framework of actions, policies, and processes that, collectively, will facilitate water transfers and the further development of a statewide water transfer market. The framework also includes mechanisms to provide protection from third party impacts. A transfers market can improve water availability for all users, including the environment. Transfers can also help to match water demand with water sources of the appropriate quality, thus increasing the utility of water supplies. The Water Transfer Program will include the following actions and recommendations:

- Establish a California Water Transfer Information Clearinghouse to provide a public information role. The clearinghouse would: (1) ensure that information regarding proposed transfers is publicly disclosed, and (2) perform ongoing research and data collection functions to improve the understanding of water transfers and their potential beneficial and adverse effects.
- Require water transfer proposals submitted to the Department of Water Resources, the U.S. Bureau of Reclamation (Reclamation), or the State Water Resources Control Board (SWRCB) to include analysis of potential groundwater, socioeconomic, or cumulative impacts as warranted by individual transfers.
- Streamline the water transfer approval process currently used by the Department of Water Resources, Reclamation, or the SWRCB. This would include clarifying and disclosing current approval procedures and underlying policies as well as improving the communication between transfer proponents, reviewing agencies, and other potentially affected parties.
- Refine quantification guidelines used by water transfer approving agencies when they are reviewing a proposed water transfer. This will include resolving issues between stakeholders and approving agencies regarding the application of current agency-based quantification criteria.
- Improve the accessibility of State and federal conveyance and storage facilities for the transport of approved water transfers.

- Clearly define carriage water requirements and resolve conflicts over reservoir refill criteria such that transfer proponents are acutely aware of the implications of these requirements.
- Identify appropriate assistance for groundwater protection programs through interaction with CALFED agencies, stakeholders, the legislature, and local agencies. This is intended to assist local agencies in the development and implementation of groundwater management programs that will protect groundwater basins in water transfer source areas.
- Establish new accounting, tracking, and monitoring methods to aid instream flow transfers under California Water Code Section 1707.

3.2.6 WATERSHED PROGRAM

The Watershed Program provides assistance, financial and technical, to local watershed programs that benefit the Bay-Delta system. Watershed actions can improve reliability by shifting the timing of flows, increasing base flows, and reducing peak flows. This also helps to maintain levee integrity during high-flow periods. Other watershed actions will improve water quality by reducing discharge of parameters of concern. The Watershed Program includes the following elements:

- **Support local watershed activities.** Implement watershed restoration, maintenance, and conservation activities that support the goals and objectives of CALFED, including improved river functions.
- **Facilitate coordination and assistance.** Facilitate and improve coordination and assistance between government agencies, other organizations, and local watershed groups.
- **Develop watershed monitoring and assessment protocols.** Facilitate monitoring efforts that are consistent with CALFED's protocols and support watershed activities that ensure that adaptive management processes can be applied.
- **Support education and outreach.** Support resource conservation education at the local watershed level, and provide organizational and administrative support to watershed programs.
- **Define watershed processes and relationships.** Identify the watershed functions and processes that are relevant to the CALFED goals and objectives, and provide examples of watershed activities that could improve these functions and processes.

3.2.7 STORAGE

Groundwater and surface water storage can be used to improve water supply reliability, provide water for the environment at times when it is needed most, provide flows timed to maintain water quality, and protect levees through coordinated operation with existing flood control reservoirs.

Decisions to construct groundwater or surface water storage will be predicated on compliance with all environmental review and permitting requirements and on maintaining balanced implementation of all CALFED elements. CALFED will undertake an annual review (see the sixth paragraph in Section 3.2 for more information about this review) to assess its progress toward balanced implementation.

Subject to these conditions, CALFED will develop and construct new groundwater and surface water storage and will aggressively implement water conservation and recycling, an improved water transfer market, and habitat restoration as appropriate to meet its goals. If all conditions are satisfied, CALFED will do the following during Stage 1 as part of the Water Management Strategy (including the ISI):

- continue to evaluate surface water and groundwater storage;
- identify acceptable site-specific projects; and
- initiate permitting, NEPA and CEQA documentation, and construction.

The total volume of new or expanded surface water and groundwater storage evaluated by CALFED ranges up to 6 million acre-feet. This Programmatic EIS/EIR discusses the consequences of operating and constructing representative surface and groundwater storage reservoirs and related facilities in the Sacramento River, San Joaquin River, and Delta Regions. Attachment A of the Programmatic EIS/EIR discusses operating assumptions for reservoirs in the Sacramento River and San Joaquin River Regions. Modeling was used to quantitatively assess the impacts associated with potential operation of reservoirs in these regions. In-Delta storage operations are not included because of the limitations of system operation modeling.

The impacts associated with operation of in-Delta storage reservoirs were assessed qualitatively for this Programmatic EIS/EIR; subsequent, site-specific environmental documents will analyze these impacts in more detail. Related structures that may be associated with reservoirs in general include inlets, outlets, siphons, roads, and conveyance and recreational facilities. Related structures that may be associated with in-Delta storage include:

- inlets from and outlets to Delta channels,
- siphons between storage islands,

- conveyance facilities located between storage islands and the state/federal pumps in the south Delta, and
- recreational facilities.

Those surface and groundwater storage projects that appear most feasible are noted in the Phase II report.

3.2.8 CONVEYANCE

The Preferred Program Alternative employs a through-Delta approach to conveyance. Modifications in Delta conveyance will result in improved water supply reliability, protection and improvement of Delta water quality, improvements in ecosystem health, and reduced risk of supply disruption resulting from catastrophic breaching of Delta levees. The proposed through-Delta conveyance facility actions include:

- construction of a new screened intake at Clifton Court Forebay with protective screening criteria;
- construction of either a new screened diversion at Tracy with protective screening criteria and/or an expansion of the new diversion at Clifton Court Forebay to meet the Tracy Pumping Plant export capacity;
- implementation of the Joint Point of Diversion for the SWP and CVP, and construction of interties;
- construction of an operable barrier at the head of Old River to improve conditions for salmon migrating up and down the San Joaquin River;
- implementation of actions to ensure availability of water of adequate quantity and quality to agricultural diverters within the south Delta, and to contribute to restoring ecological health of aquatic resources in the lower San Joaquin River and south Delta. Actions may include channel dredging, extension and screening of agricultural intakes, consolidation of agricultural intakes, operable barriers, levee setbacks and levee improvements (such as levee reinforcement or seepage control). Actions will be staged, with appropriate monitoring and testing to guide the implementation process;
- operational changes to the SWP operating rules to allow export pumping up to the current physical capacity of the SWP export facilities;

- study and evaluate a screened diversion structure on the Sacramento River with a range of diversion capacities up to 4,000 cfs as a measure to improve drinking water quality in the event that the Water Quality Program measures do not result in continuous improvements toward CALFED drinking water goals. The Sacramento River diversion facility would likely include a fish screen, pumps, and a channel between the Sacramento and Mokelumne Rivers. The Sacramento River diversion will be considered only after three separate assessments are satisfactorily completed: first, a thorough assessment of Delta Cross Channel (DCC) operation strategies, and confirmation of continued concern over water quality impacts from DCC operations; second, a thorough evaluation of the technical viability of a diversion facility; and third, satisfactory resolution of the fisheries concerns about a diversion facility. The assessments of the DCC and the viability of a diversion facility on the Sacramento River will be completed simultaneously. The results of all three evaluations will be shared with the Delta Drinking Water Council or its successor and the expert panel evaluating fish impacts of Delta conveyance. If these evaluations demonstrate that a Sacramento River diversion facility is necessary to address drinking water quality concerns and can be constructed without adversely affecting fish populations, it will be constructed as a part of the Preferred Program Alternative; and
- construct new setback levees, and dredge and/or improve existing levees along the channels of the lower Mokelumne River system from Interstate 5 downstream to the San Joaquin River.

The Preferred Program Alternative includes a process for determining the conditions under which any additional conveyance facilities and/or other water management actions would be taken in the future. The process would include:

- an evaluation of how water suppliers can best provide a level of public health protection equivalent to Delta source water quality of 50 parts per billion bromide and 3 parts per million TOC, and
- an evaluation based on two independent expert panels' reports—one on CALFED's progress toward these measurable water quality goals and the second on CALFED's progress toward ecosystem restoration objectives, with particular emphasis on fish recovery.

3.3 MULTI-SPECIES CONSERVATION STRATEGY

The MSCS is a comprehensive species and habitat conservation program that is based on all other elements of CALFED. The MSCS identifies:

- conservation goals for NCCP communities and evaluated species;
- prescriptions for achieving NCCP community and species goals;
- potential CALFED impacts on NCCP communities, evaluated species, and FESA designated critical habitats;
- conservation measures that:
 - have been incorporated into the ERP that temporally and spatially direct ERP actions to help achieve or contribute to the recovery of selected species;
 - refine other CALFED elements to achieve species goals;
 - will be incorporated into CMARP to achieve species monitoring and research needs; and
 - apply to all CALFED elements that are designed to avoid, minimize, and compensate for impacts on NCCP communities and evaluated species; and
- a framework for CALFED compliance with FESA, CESA, and NCCPA at both the programmatic and project-specific levels.

3.3.1 SPECIES GOALS

USFWS, NMFS, and DFG, working with CALFED ERP staff, recommended conservation goals—“recovery”, “contribute to recovery”, or “maintain”—for each evaluated species. The recommended goals have been incorporated into CALFED. CALFED will make all reasonable attempts to achieve these goals. See Table 2-2 for a list of evaluated species within the MSCS Focus Area and the conservation goal for each.

“Recovery”, “contribute to recovery”, and “maintain” are defined below. The definitions that appear here are not the same as to those that appear in State or federal statutes or regulations. The goals are not intended to substitute for any statutory or regulatory requirement. However, the goals generally are intended to enable USFWS, NMFS, and DFG to make necessary findings and determinations under FESA, CESA, and NCCPA. The MSCS species goals have been incorporated into CALFED.

3.3.1.1 RECOVERY ("R")

For species designated “R”, CALFED has established a goal to recover the species within the CALFED ERP ecological management zones. A goal of “recovery” was assigned to those

species whose recovery is dependent on restoration of the Delta and Suisun Bay/Marsh ecosystems and for which CALFED could reasonably be expected to undertake all or most of the actions necessary to recover the species. Recovery is achieved when the decline of a species is arrested or reversed, threats to the species are neutralized, and the species' long-term survival in nature is assured.

Recovery is equivalent, at a minimum, to the requirements for delisting a species under FESA and CESA. Certain species, such as anadromous fish, have threats outside the geographic scope or purview of CALFED (e.g., ocean harvest regulated under the Magnuson-Stevens Act). Therefore, in some instances CALFED may not be able to complete all actions potentially necessary to recover the species; however, CALFED will implement all necessary recovery actions within the ERP ecological management zones. For other species, CALFED aims to achieve more than would be required for delisting (e.g., restoration of a species and/or its habitat to a level beyond delisting requirements). The effort required to achieve the goal of "recovery" may be highly variable between species. In sum, to achieve the goal of recovery, CALFED is expected to undertake all actions within the ERP ecological management zones and program scope necessary to recover the species.

3.3.1.2 CONTRIBUTE TO RECOVERY ("r")

For species designated "r", CALFED will make specific contributions toward the recovery of the species. The goal "contribute to recovery" was assigned to species for which CALFED actions affect only a limited portion of the species' range and/or CALFED actions have limited effects on the species.

To achieve the goal of contributing to a species' recovery, CALFED is expected to undertake some of the actions under its control and within its scope that are necessary to recover the species. When a species has a recovery plan, CALFED may implement both plan measures that are within the CALFED Problem Area, and some measures that are outside the Problem Area. For species without a recovery plan, CALFED will need to implement specific measures that will benefit the species.

3.3.1.3 MAINTAIN ("m")

For species designated "m", CALFED will take actions to maintain the species. This category is less rigorous than "contribute to recovery". The goal "maintain" was assigned to species expected to be minimally affected by CALFED actions. For this category, CALFED will avoid, minimize, and compensate for any adverse effects to the species commensurate with the level of effect on the species. Actions may not actually contribute to the recovery of the species; however, at a minimum, they will be expected to not contribute to the need to list a species or degrade the status of a listed species. CALFED will also, to the extent practicable, improve habitat conditions for these species.

CALFED proposes the goal "maintain" for all evaluated species not assigned a goal of "recovery" or "contribute to recovery".

3.3.2 PRESCRIPTIONS FOR REACHING SPECIES GOALS

Specific prescriptions were developed to identify the population and habitat conditions that, if achieved, would indicate that the goal established for each evaluated species has been met. The prescriptions are as follows:

- *Species designated “m”*—increase or have no discernable adverse effect on the size or distribution of species populations.
- *Species designated “R” and “r”*—Table 3-1 lists these prescriptions, which are subject to modification through adaptive management. (See Chapter 8, “Adaptive Management”, for more information about this process.) Recovery criteria may be revised as a result of additional research, monitoring, and data interpretation. For example, recovery plans currently being developed for many tidal marsh species may lead to new recovery criteria.

The prescription for each “R” and “r” species provides habitat or population targets. If these targets are met and threats to the species are reduced, the species goal will be achieved. CALFED agency staff, CALFED staff, and other species specialists used species recovery plans, other relevant information, and professional judgment to develop prescriptions for species goals.

In some cases, there is more than one set of recovery criteria for a given species. The MSCS incorporates what the fish and wildlife agencies believe to be the most up-to-date criteria. In some cases, there were no definitive measurable recovery criteria. Such criteria may be developed over time as a result of additional research and adaptive management.

3.3.3 RELATIONSHIP OF CALFED TO RECOVERY PLANS

FESA requires USFWS and NMFS to prepare recovery plans for each federally listed species, except where preparation of a recovery plan will not promote the species’ conservation. Under CESA, DFG is authorized, but is not required, to prepare recovery plans. CALFED does not supersede or fulfill USFWS’s and NMFS’s obligation to prepare plans for listed species. However, USFWS and NMFS have prepared recovery plans for many of the evaluated species listed under FESA. CALFED’s species prescriptions and conservation measures are based on applicable recovery plans to the extent consistent with the species goal.

CALFED is expected to incorporate appropriate goals and actions contained in new or revised recovery plans prepared by USFWS, NMFS, and DFG. In addition, the ERP is expected to be revised periodically to reflect new and better information about the recovery of listed species in accordance with new or revised recovery plans. Once CALFED is approved, USFWS, NMFS, and DFG can strengthen recovery planning efforts by harmonizing recovery plans with the ERP, CMARP, WMS, and other appropriate aspects of CALFED. USFWS, NMFS, and DFG can also use

information developed by CALFED to revise existing recovery plans and to aid in developing new recovery plans. The MSCS is designed to coordinate or integrate implementation of CALFED with USFWS's, NMFS's, and DFG's recovery planning efforts to ensure that there is a single blueprint for the restoration of the Bay-Delta ecosystem.

3.3.4 GOALS FOR NCCP COMMUNITIES

The MSCS goals for NCCP communities addressed in the ERP are predicated on ERP habitat restoration and enhancement strategic goals and targets. MSCS goals for NCCP communities not addressed by the ERP are predicated on the fisheries and aquatic ecosystems and vegetation and wildlife mitigation strategies in the Programmatic EIS/EIR. Goals for NCCP communities fall into four categories:

- Substantially increase extent and quality.
- Protect, enhance, or restore.
- Avoid, minimize, and compensate for loss.
- Avoid, minimize, and compensate for loss where evaluated species are affected.

The MSCS goals for each NCCP community are presented in Table 3-2.

3.3.5 PRESCRIPTIONS FOR REACHING NCCP COMMUNITY GOALS

Prescriptions for NCCP communities are presented in Table 3-2 and include the ERP restoration and enhancement targets and actions established for those habitats. For NCCP habitats not addressed in the ERP, the MSCS prescriptions are in some cases to replace the loss of habitat functions caused by CALFED actions and in other cases to replace the loss of habitat functions only if evaluated species are affected by CALFED actions. In addition, the MSCS prescription includes avoiding, minimizing, and compensating for CALFED impacts on most NCCP habitats, and on all NCCP habitats where evaluated species are present and could be affected. The prescription for NCCP fish groups is to restore and maintain populations of fishes comprising the group to levels that ensure the long-term viability of their populations.

NCCP community goals may be refined by USFWS, NMFS, and DFG throughout CALFED implementation as new information is developed through CALFED's adaptive management process. Although these programmatic goals are suitable for the programmatic NCCP, refinements will be made as CALFED actions are better defined and ASIPs are completed.

3.3.6 CHANGES IN GOALS AND PRESCRIPTIONS OVER TIME

As CALFED proceeds during at least the next 30 years, project implementation will cause enough changes that the Central Valley landscape may be expected to change. Species populations are also likely to change, but the magnitude and nature of such changes are not readily predictable. Species and habitat responses to actions will be documented through monitoring and adaptive management (see Chapters 7 and 8). This documentation will allow USFWS, NMFS, and DFG, in consultation with other CALFED agencies, to determine whether NCCP community and evaluated species goals and prescriptions should be modified. If a given species or suite of species responds well to targeted restoration actions, priority of restoration activities may be shifted to other species or habitats, and/or species or habitat prescriptions may be subject to modification.

3.3.7 CONSERVATION MEASURES

The MSCS developed two types of conservation measures for achieving NCCP community and evaluated species goals:

- measures to avoid, minimize, and compensate for CALFED's adverse effects on NCCP communities and evaluated species; and
- measures to enhance NCCP communities and evaluated species that are not directly linked to CALFED's adverse impacts.

Conservation measures and the process for developing them are described in Chapter 4, "Effects of CALFED Actions and Conservation Measures".

3.3.8 FRAMEWORK FOR REGULATORY COMPLIANCE

The MSCS is an approach to fulfilling the requirements of FESA, CESA, and NCCPA that may be used by entities implementing CALFED actions. The processes for ensuring programmatic and project-specific-level compliance with these acts are described in Chapter 6, "Compliance with the Federal and California Endangered Species Acts and the Natural Community Conservation Planning Act".

3.4 COMPREHENSIVE MONITORING, ASSESSMENT, AND RESEARCH PROGRAM

CALFED acknowledges the need to reduce uncertainties about the factors affecting the resources of the Bay-Delta system. CMARP was developed to address this need and is designed to provide those new facts and scientific interpretations that will be necessary to implement CALFED and to evaluate the success of CALFED actions. CMARP will ensure that information gathering and necessary scientific evaluation will be provided toward reducing uncertainties for the successful development and implementation of CALFED.

CMARP is designed to provide scientific analysis on all the CALFED elements, including the Levee System Integrity Program, Ecosystem Restoration Program, Conservation Strategy, Water Quality Program, Water Use Efficiency Program, Water Transfer Program, Watershed Program, MSCS, Storage, and Conveyance. CMARP will involve monitoring, data management, assessment, reporting, research, implementation (pilot and full scale), and independent scientific review. In addition, CMARP will help document and provide indicators and performance measures, quantify changes in natural and human influences, and increase understanding of how to improve the natural resources addressed by CALFED. Furthermore, CMARP along with helping to maintain quality and confidence in CALFED, will provide access to indicators and underlying data, and report findings to the public and resource managers.

The relationship of CMARP to the MSCS and its monitoring requirements are described in Chapter 7, "Monitoring".

3.5 ADAPTIVE MANAGEMENT

Adaptive management is an essential concept that applies to all CALFED elements. According to this concept, CALFED must monitor its processes constantly and, when necessary, must adapt its actions to help restore ecological health and improve water management. CALFED's actions have been designed according to a current understanding of the Bay-Delta system. They will be monitored so that CALFED agencies may either confirm this understanding or modify subsequent actions to make the program more effective. By applying adaptive management to its actions, CALFED can meet multiple objectives more easily because it can stay flexible enough to respond to new information, changed conditions, improved understanding.

Chapter 6 describes how CALFED can use adaptive management to achieve MSCS regulatory and biological objectives. Chapter 8 explains how CALFED can use this process to meet MSCS monitoring requirements.

3.6 STAGING OF CALFED ACTIONS

Because CALFED is complex, its actions need to be completed in stages. The staging plan, with the linkages that are being developed, will reinforce CALFED ecosystem restoration goals. Failure to meet the objectives of one CALFED element may preclude implementation of linked elements; therefore, all participants share an interest in successfully meeting the objectives of each element. With this staging plan, the documentation that will tier from the programmatic MSCS can focus initially on providing the necessary take authorization for Stage 1 actions. In addition, it can further refine the MSCS for actions that will take place in later stages.

The Preferred Program Alternative consists of a set of broadly described programmatic actions that set CALFED's long-term, overall direction. Based on a staged implementation process, it includes specified decision-making processes and criteria to ensure that future actions meet CALFED's goals and objectives. This alternative identifies possible future actions and links them with conditions or other mechanisms that will guide CALFED's decisions about these future stages. For example, agreements reached by agencies and stakeholders have established methods of ensuring that CALFED will continue to reach its goals. At the same time, the Preferred Program Alternative is flexible enough to allow CALFED to assess previous actions, incorporate new scientific information as it becomes available, and base its future decisions on this new information.

Table 3-1. Prescriptions for Species with “R” and “r” Goals

Species with “R” Goal	
Species	Prescription for Species Goal
Delta smelt (<i>Hypomesus transpacificus</i>)	Achieve recovery objectives identified for delta smelt in the recovery plan for the Sacramento/San Joaquin Delta native fishes (U.S. Fish and Wildlife Service 1996).
Longfin smelt (<i>Spirinchus thaleichthys</i>)	Achieve recovery objectives identified for longfin smelt in the recovery plan for the Sacramento/San Joaquin Delta native fishes (U.S. Fish and Wildlife Service 1996).
Green sturgeon (<i>Acipenser medirostris</i>)	Achieve recovery objectives identified for green sturgeon in the recovery plan for the Sacramento/San Joaquin Delta native fishes (U.S. Fish and Wildlife Service 1996).
Sacramento River winter-run chinook salmon (<i>Oncorhynchus tshawytscha</i> [wr]) evolutionarily significant unit (ESU)	Achieve recovery objectives under development for the Sacramento River winter-run chinook salmon ESU recovery plan. Proposed objectives include: The mean annual spawning abundance during any 13 consecutive years will be 10,000 females. The geometric mean of the Cohort Replacement Rate during those same 13 years will be greater than 1.0. Estimates of these criteria will be based on natural production alone and will not include hatchery-produced fish. If the precision for estimating spawning run abundance has a standard error greater than 25%, then the sampling period over which the geometric mean of the Cohort Replacement Rate is estimated will be increased by 1 year for each 10% of error over 25% (National Marine Fisheries Service 1998).
Central Valley fall-/late-fall-run chinook salmon (<i>Oncorhynchus tshawytscha</i> [fr]) ESU	Achieve species restoration goals under development for the Central Valley fall-/late-fall-run chinook salmon ESU. CALFED, the California Department of Fish and Game (DFG), and the National Marine Fisheries Service (NMFS) will work together to identify restoration goals following the “Viable Salmonid Populations” (VSP) framework in a process separate from the NMFS recovery planning process. These goals will aim to ensure the long-term viability of Sacramento and San Joaquin fall-run and Sacramento late-fall-run chinook salmon. The Central Valley fall-/late-fall-run ESU is a candidate species, not a threatened or endangered species, under the federal Endangered Species Act (FESA). The NMFS recovery plan for Central Valley salmonids will therefore not include formal recovery goals for populations in this ESU. The recovery plan for Central Valley salmonids will identify factors of concern and measures to ensure the long-term conservation of the Central Valley fall-/late-fall-run ESU, and recovery actions proposed for listed ESUs will be evaluated to ensure that they do not place nonlisted species at significant risk.

Species with "R" Goal	
Species	Prescription for Species Goal
Central Valley spring-run chinook salmon (<i>Oncorhynchus tshawytscha</i> [sr]) ESU	<p>Achieve recovery objectives under development for the Central Valley spring-run chinook salmon ESU. The Central Valley spring-run chinook salmon ESU will be regarded as restored when the ESU meets specific viability criteria to be established in the NMFS recovery plan for Central Valley salmonids. Viability of the Central Valley spring-run ESU will be assessed according to the VSP framework developed by NMFS (NMFS, in review). The framework deals with four population characteristics:</p> <ul style="list-style-type: none"> • <i>Abundance</i>: Populations are large enough to resist extinction due to random environmental, demographic and genetic variation. • <i>Productivity</i>: Populations have enough reproductive capacity to ensure resistance to episodes of poor freshwater or ocean conditions and the ability to rebound rapidly during favorable periods, without the aid of artificial propagation. • <i>Spatial Distribution</i>: Populations are distributed widely and with sufficient connectivity such that catastrophic events do not deplete all populations and stronger populations can rescue depleted populations. • <i>Diversity</i>: Populations have enough genetic and life history diversity to enable adaptation to long-term changes in the environment. Populations achieve sufficient expression of historical life history strategies (migration timing, spawning distribution), are not negatively impacted by outbreeding depression resulting from straying of domesticated hatchery fish, and are not negatively impacted by inbreeding depression due to small population size and inadequate connectivity between populations. <p>The NMFS recovery planning for Central Valley salmonids will proceed in two phases. The first phase will be conducted by a technical recovery team (TRT) that will produce numeric recovery criteria for populations and the ESU following the VSP framework, factors for decline, early actions for recovery, and provide plans for monitoring and evaluation. The TRT will review existing salmonid population recovery goals and management programs being implemented by federal and State agencies and will coordinate with agency scientists, CALFED staff and Central Valley science/restoration teams such as the Interagency Ecological Program work teams during this first phase. TRT products will be peer-reviewed and made available for public comment.</p> <p>The second phase will be identification of recovery measures and estimates of cost and time required to achieve recovery. The second phase will involve participation by agency and CALFED staff as well as involvement by a broad range of stakeholders, including local and private entities, with the TRT providing technical guidance on biological issues.</p>

Species with "R" Goal	
Species	Prescription for Species Goal
Central Valley steelhead (<i>Oncorhynchus mykiss</i> [cv]) ESU	<p>Achieve recovery objectives under development for the Central Valley steelhead ESU. The Central Valley steelhead ESU will be regarded as restored when the ESU meets specific viability criteria to be established in the NMFS recovery plan for Central Valley salmonids. Viability of the Central Valley steelhead ESU will be assessed according to the VSP framework developed by the NMFS (NMFS, in review). The framework deals with four population characteristics:</p> <ul style="list-style-type: none"> • <i>Abundance</i>: Populations are large enough to resist extinction due to random environmental, demographic and genetic variation. • <i>Productivity</i>: Populations have enough reproductive capacity to ensure resistance to episodes of poor freshwater or ocean conditions and the ability to rebound rapidly during favorable periods, without the aid of artificial propagation. • <i>Spatial Distribution</i>: Populations are distributed widely and with sufficient connectivity such that catastrophic events do not deplete all populations and stronger populations can rescue depleted populations. • <i>Diversity</i>: Populations have enough genetic and life history diversity to enable adaptation to long-term changes in the environment. Populations achieve sufficient expression of historical life history strategies (migration timing, spawning distribution), are not negatively impacted by outbreeding depression resulting from straying of domesticated hatchery fish, and are not negatively impacted by inbreeding depression due to small population size and inadequate connectivity between populations. <p>The NMFS recovery planning for Central Valley salmonids will proceed in two phases. The first phase will be conducted by a TRT that will produce numeric recovery criteria for populations and the ESU following the VSP framework, factors for decline, early actions for recovery, and provide plans for monitoring and evaluation. The TRT will review existing salmonid population recovery goals and management programs being implemented by federal and State agencies and will coordinate with agency scientists, CALFED staff and Central Valley science/restoration teams such as the Interagency Ecological Program work teams during this first phase. TRT products will be peer-reviewed and made available for public comment.</p> <p>The second phase will be identification of recovery measures and estimates of cost and time required to achieve recovery. The second phase will involve participation by agency and CALFED staff as well as involvement by a broad range of stakeholders, including local and private entities, with the TRT providing technical guidance on biological issues.</p>
Sacramento splittail (<i>Pogonichthys</i> <i>macrolepidotus</i>)	<p>Achieve recovery objectives identified for Sacramento splittail in the recovery plan for the Sacramento/San Joaquin Delta native fishes (U.S. Fish and Wildlife Service 1996).</p>

Species with "R" Goal	
Species	Prescription for Species Goal
Suisun ornate shrew (<i>Sorex ornatus sinuosus</i>)	Maintain the current distribution and existing populations of the Suisun ornate shrew and reestablish and maintain viable species' populations throughout its historical range in the portion of the Bay Region located within the Ecosystem Restoration Program (ERP) Focus Area.
San Pablo song sparrow (<i>Melospiza melodia samuelis</i>)	Maintain the current distribution and existing populations of the San Pablo song sparrow and reestablish and maintain viable species' populations throughout its historical range in the portion of the Bay Region located within the ERP Focus Area.
Suisun song sparrow (<i>Melospiza melodia maxillaris</i>)	Maintain the current distribution and existing populations of the Suisun song sparrow and reestablish and maintain viable species' populations throughout its historical range in portions of the Delta and Bay Regions located within the ERP Focus Area.
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	Maintain and restore connectivity among riparian habitats occupied by the valley elderberry longhorn beetle and within its historical range along the Sacramento and San Joaquin Rivers and their major tributaries.
Lange's metalmark butterfly (<i>Apodemia mormo langei</i>)	Continue to protect and expand the size of the Antioch Dunes population of the Lange's metalmark butterfly, enhance and restore suitable habitat at and in the vicinity of the Antioch Dunes, and achieve recovery goals identified in the USFWS recovery plan.
Soft bird's-beak (<i>Cordylanthus mollis</i> ssp. <i>mollis</i>)	Maintain the current distribution and existing populations of soft bird's-beak; reestablish and maintain viable populations throughout the species' historical range.
Suisun thistle (<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>)	Maintain the current distribution and existing populations of Suisun thistle, establish 10 new populations, and increase overall population size tenfold.
Antioch Dunes evening-primrose (<i>Oenothera deltoides</i> ssp. <i>howellii</i>)	Continue to protect and expand the size of the Antioch Dunes population of Antioch Dunes evening-primrose, enhance and restore suitable habitat at and in the vicinity of the Antioch Dunes, and achieve recovery goals identified in the USFWS recovery plan.
Contra Costa wallflower (<i>Erysimum capitatum</i> ssp. <i>angustatum</i>)	Continue to protect and expand the size of the Antioch Dunes population of Contra Costa wallflower, enhance and restore suitable habitat at and in the vicinity of the Antioch Dunes, and achieve recovery goals identified in the USFWS recovery plan.
Mason's lilaeopsis (<i>Lilaeopsis masonii</i>)	Expand suitable and occupied habitat for the Mason's lilaeopsis by 100 linear miles; protect at least 90% of the currently occupied habitat, including 90% of high-quality habitat occurrences in the North, South, and East Delta and Napa River Ecological Management Units.
Suisun Marsh aster (<i>Aster lentus</i>)	Expand suitable and occupied habitat for the Suisun Marsh aster by 100 linear miles; protect at least 90% of the currently occupied habitat, including 90% of high-quality habitat occurrences in the North, South, and East Delta and Napa River Ecological Management Units.

Species with "r" Goal	
Species	Prescription for Species Goal
Riparian brush rabbit (<i>Sylvilagus bachmani riparius</i>)	Protect, enhance, and expand the species' Caswell Memorial State Park population; restore four additional self-sustaining populations in the Delta and along the San Joaquin River by 2020 (U.S. Fish and Wildlife Service 1998b).
San Joaquin Valley woodrat (<i>Neotoma fuscipes riparia</i>)	Protect, enhance, and expand the species' Caswell Memorial State Park population; improve habitat connectivity and genetic interchange among isolated populations (U.S. Fish and Wildlife Service 1998b).
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	Maintain the current distribution and existing populations of the salt marsh harvest mouse; reestablish and maintain viable populations of the species throughout its historical range in the portion of the Bay Region located within the ERP Focus Area.
San Pablo California vole (<i>Microtus californicus sanpabloensis</i>)	Maintain the current distribution and existing populations of the San Pablo California vole; reestablish and maintain viable populations of the species throughout its historical range in the Delta Region and the portion of the Bay Region located within the ERP Focus Area.
Bank swallow (<i>Riparia riparia</i>)	Allow reaches of the Sacramento River and its tributaries that are unconfined by flood control structures (bank revetment and levees) to continue to meander freely, thereby creating suitable areas on banks for nesting through bank erosion.
California yellow warbler (<i>Dendroica petechia brewsteri</i>)	Maintain and enhance suitable migration habitats for the species in the riparian corridor and restore suitable breeding habitat within its historical breeding range in the Central Valley.
Little willow flycatcher (<i>Empidonax traillii brewsteri</i>)	Maintain and enhance suitable migration habitats for the species in the riparian corridor and restore suitable breeding habitat within its historical breeding range in the Central Valley.
California clapper rail (<i>Rallus longirostris obsoletus</i>)	Maintain the current distribution and existing populations of the California clapper rail; reestablish and maintain viable populations of the species throughout its historical range in the portion of the Bay Region located within the ERP Focus Area.
California black rail (<i>Laterallus jamaicensis coturniculus</i>)	Maintain the current distribution and existing populations of the California black rail; reestablish and maintain viable populations of the species throughout its historical range in the Delta Region and the portion of the Bay Region within the ERP Focus Area.
Greater sandhill crane (<i>Grus canadensis tabida</i>)	Consistent with CALFED's mission, achieve recovery objectives identified in the Pacific Flyway Management Plan for the Central Valley population of greater sandhill cranes and in Assembly Bill 1280 legislation that apply to the CALFED Problem Area, the Butte Sink, and other areas used by these species.
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	Achieve recovery objectives identified in the recovery plan for the least Bell's vireo (U.S. Fish and Wildlife Service 1998a) that apply to the ERP focus study area.

Species with "r" Goal	
Species	Prescription for Species Goal
Saltmarsh common yellowthroat (<i>Geothlypis trichas sinuosa</i>)	Maintain the current distribution and existing populations of the saltmarsh common yellowthroat; reestablish and maintain viable populations of the species throughout its historical range in the portion of the Bay Region located within the ERP Focus Area.
Swainson's hawk (<i>Buteo swainsoni</i>)	Protect, enhance, and increase Swainson's hawk habitat sufficiently to support a viable breeding population. The interim prescription is to increase the current estimate of breeding pairs in the Central Valley from 1,000 to 2,000. This prescription will be modified based on the results of a population viability analysis being conducted by DFG.
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	Protect existing suitable riparian forest habitat areas within the species' historical range; increase the area of suitable habitat enough to allow the Sacramento Valley population to expand naturally.
Sacramento perch (<i>Archoplites interruptus</i>)	Establish multiple self-sustaining populations of Sacramento perch within the Central Valley.
Giant garter snake (<i>Thamnophis gigas</i>)	Protect the existing population and habitat within the Delta Region; restore, enhance, and manage suitable habitat areas adjacent to known populations to encourage the species to expand naturally.
Delta green ground beetle (<i>Elaphrus viridis</i>)	Protect all known occupied habitat areas from potential adverse effects associated with current and potential future land uses; establish 3 additional populations of the delta green ground beetle within its current and/or historical range.
Northern California black walnut (<i>Juglans californica</i> var. <i>hindsii</i>) (native stands)	Protect and maintain the remaining stands, and establish 5 to 10 naturally regenerating stands of the Northern California black walnut within the species' historical range.
Bristly sedge (<i>Carex comosa</i>)	Research habitat requirements and use knowledge gained to develop and implement specific recovery measures.
Point Reyes bird's-beak (<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>)	Maintain, enhance, and restore suitable high marsh and high marsh upland transition habitat, which is known to be beneficial to Point Reyes bird's-beak, around San Pablo Bay.
Crampton's tuctoria (<i>Tuctoria mucronata</i>)	Review and update recovery plan targets, protect all extant occurrences, and manage habitat to benefit Crampton's tuctoria (e.g., manage grazing).
Delta mudwort (<i>Limosella subulata</i>)	Protect at least 90% of occupied habitat, including 90% of high-quality habitat, throughout the species range to protect geographic diversity; expand suitable habitat by 100 linear miles.
Delta tule pea (<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>)	Protect at least 90% of occupied habitat, including 90% of high-quality habitat, throughout the species range to protect geographic diversity; expand suitable habitat by 100 linear miles.

Species with "r" Goal	
Species	Prescription for Species Goal
Delta coyote-thistle (<i>Eryngium racemosum</i>)	<p>Survey all extant populations and potential suitable habitat across the range of the species and update population status and land ownership information. Based on survey results, bring at least 10 of the largest naturally occurring populations that are viable in the long term, and that are not presently protected, into permanent protected status. Based on survey results, bring at least 50% of all extant populations and individuals under permanent protected status. Manage all protected populations for long-term viability.</p> <p>Increase suitable habitat by at least 50% over existing extent (based on survey results). Increase populations and individuals by at least 25% over existing numbers, based on survey results. Newly discovered populations will be evaluated for protection based on geographic representation, viability, genetics, ecology, and opportunity for long-term protection.</p>
Alkali milkvetch (<i>Astragalus tener</i> var. <i>tener</i>)	Protect extant populations of the alkali milkvetch and reintroduce the species near extirpated populations.

Note: Where prescriptions were taken from existing recovery plans, the recovery plan is referenced.

Table 3-2. Goals and Prescriptions for NCCP Communities

NCCP Community	NCCP Community Goal	Prescription for NCCP Community Goal
Tidal perennial aquatic	Substantially increase extent and quality.	Restore 9,000 acres of tidal perennial aquatic habitat and approximately 150–330 miles (900–1,700 acres) of tidal sloughs within the Delta and Bay Regions. Avoid, minimize, and compensate for all CALFED impacts on tidal perennial aquatic habitat.
Valley riverine aquatic	Substantially increase extent and quality.	Substantially increase shaded riverine aquatic (SRA) and instream habitats, improve flows for anadromous and other native fishes, improve stream temperatures, and improve anadromous fish passage and rearing along the Sacramento and San Joaquin Rivers and their tributaries. Avoid, minimize, and compensate for all CALFED impacts on valley riverine aquatic habitat. CALFED will reach its goals for valley riverine and montane riverine aquatic habitats by restoring approximately 10,550–11,800 acres of riparian habitat along 235 miles of channels, and protecting and enhancing approximately 18,000–26,000 acres of stream channel meander corridors.
Montane riverine aquatic	Substantially increase extent and quality.	Increase the extent of SRA and instream habitats, improve flows for anadromous and other native fishes, improve stream temperatures, and improve anadromous fish passage and rearing along tributaries of the Sacramento and San Joaquin River and the North Bay. Avoid, minimize, and compensate for all CALFED impacts on montane riverine aquatic habitat. CALFED will reach its goals for montane riverine and valley riverine aquatic habitat by restoring approximately 10,550–11,800 acres of riparian habitat along 235 miles of channels, and protecting and enhancing approximately 18,000–26,000 acres of stream channel meander corridors. Some riverine aquatic habitat will be restored and enhanced on montane streams, but most will occur on valley streams.
Lacustrine	Substantially increase extent and quality.	Restore 1,600 acres of lacustrine habitat adjacent to existing and restored wetlands in the Bay Region. Avoid, minimize, and compensate for loss of lacustrine habitat where evaluated species are affected by CALFED actions.

Table 3-2. Continued

NCCP Community	NCCP Community Goal	Prescription for NCCP Community Goal
Saline emergent	Substantially increase extent and quality.	Restore 7,500–12,000 acres and enhance 6,200 acres of saline emergent habitat, and restore habitat along 35–70 miles (215–425 acres) of restored tidal sloughs in the Bay Region. Avoid, minimize, and compensate for all CALFED impacts on saline emergent habitat.
Tidal freshwater emergent	Substantially increase extent and quality.	Increase the extent of tidal freshwater emergent habitat by 30,200–45,800 acres in the Delta Region through restoration, restore habitat along 115–260 miles (700–1,275 acres) of restored tidal sloughs, and enhance habitat by controlling non-native plants. Avoid, minimize, and compensate for all CALFED impacts on tidal freshwater emergent habitat.
Nontidal freshwater permanent emergent	Substantially increase extent and quality.	Restore 19,600 acres of nontidal freshwater permanent emergent habitat in the Delta Region, including 2,600 acres of open-water areas within restored wetlands. Avoid, minimize, and compensate for all CALFED impacts on nontidal freshwater permanent emergent habitat.
Natural seasonal wetland	Protect, enhance, or restore.	Protect, enhance, or restore 100 acres of vernal pools and 500–1,000 acres of surrounding native upland buffer habitat in the Bay Region. Avoid, minimize, and compensate for all CALFED impacts on natural seasonal wetland habitat.
Managed seasonal wetland	Substantially increase extent and quality.	Restore 29,000–29,500 acres of managed seasonal wetland habitat in the Delta and Bay Regions and enhance approximately 308,125 acres of habitat in all CALFED regions. Avoid, minimize, and compensate for loss of managed seasonal wetland habitat where evaluated species are affected by CALFED actions.
Valley/foothill riparian	Substantially increase extent and quality.	Restore approximately 1,200 acres of riparian habitat in the Delta Region, 200–300 acres in the Bay Region, 3,650 acres in the Sacramento River Region, and 5,450–5,950 acres in the San Joaquin River Region; protect and enhance 500 acres of existing riparian habitat in the Delta Region; and enhance and restore riparian habitat associated with restoration of 18,000–26,000 acres of stream channel meander corridors in the Sacramento and San Joaquin River Regions. Avoid, minimize, and compensate for all CALFED impacts on valley/foothill riparian habitat.

Table 3-2. Continued

NCCP Community	NCCP Community Goal	Prescription for NCCP Community Goal
Montane riparian	Substantially increase extent and quality.	Increase the extent and connectivity of montane riparian habitat on tributary streams in the Sacramento, San Joaquin, and Bay Regions. Avoid, minimize, and compensate for all CALFED impacts on montane riparian habitat.
Grassland	<p><i>Perennial grassland:</i> Substantially increase extent and quality.</p> <p><i>Annual grassland:</i> Avoid, minimize, and compensate for loss where evaluated species are affected.</p>	Restore 9,000–11,000 acres of perennial grassland in the Bay and Delta Regions; enhance grassland adjacent to wetlands and in the Sacramento River Region; and replace the habitat functions and values lost for evaluated species as a result of impacts on grassland habitat.
Inland dune scrub	Protect, enhance, or restore.	Enhance 50–100 acres of inland dune scrub habitat in the Delta Region to increase the population of associated evaluated species. Avoid, minimize, and compensate for all CALFED impacts on inland dune scrub habitat.
Upland scrub	Avoid, minimize, and compensate for loss where evaluated species are affected.	Replace the habitat functions lost for evaluated species as a result of impacts on upland scrub habitat.
Valley/foothill woodland and forest	Avoid, minimize, and compensate for loss.	Replace the habitat functions lost as a result of impacts on valley/foothill woodland and forest habitat.
Montane woodland and forest	Avoid, minimize, and compensate for loss.	Replace the habitat functions lost as a result of impacts on the montane woodland and forest habitat.
Upland cropland	Protect, enhance, or restore.	Manage the upland cropland portion of 353,933–388,933 acres of agricultural lands to enhance wildlife habitat values. Avoid, minimize, and compensate for loss of upland cropland habitat where evaluated species are affected by CALFED actions.
Seasonally flooded agricultural land	Protect, enhance, or restore.	Manage the seasonally flooded agricultural land portion of 353,933–388,933 acres of agricultural lands to enhance wildlife habitat values. Avoid, minimize, and compensate for loss of seasonally flooded agricultural land habitat where evaluated species are affected by CALFED actions.

Table 3-2. Continued

NCCP Community	NCCP Community Goal	Prescription for NCCP Community Goal
Anadromous fish species (habitat and populations)	Substantially increase extent and quality.	Substantially improve anadromous fish species habitat and restore and maintain chinook salmon and steelhead populations to levels that ensure the long-term viability of individual runs and species.
Estuarine fish species (habitat and populations)	Substantially increase extent and quality.	Substantially improve estuarine fish species habitat and restore and maintain populations of evaluated species of estuarine fish species to levels that ensure their long-term viability.